

REMARKS

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Claim 1 has been amended to recite that the catalyst comprises metal particles of Ag and/or Au supported on a carrier. Support for this amendment is found on page 6, lines 23-25 of the specification. Claims 4 and 6 have been amended to correct a typographical error in the claim. New claim 7 has been added to the application, based upon the teachings at page 7, lines 23 to page 8, line 8 of the specification. New claims 8 and 9 have been added to the application, and are identical to claims 3 and 4, except dependent on new claim 7. The claims have also been amended to make minor, editorial changes, which do not affect the scope of the claims.

No new matter has been added to the application by these amendments.

The patentability of the present invention over the disclosure of the reference relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Thus, the rejection of claims 1-6 under 35 U.S.C. § 102(b) as being anticipated by Ishii et al., as well as the rejection of claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over Ishii et al. are respectfully traversed.

Ishii et al. disclose a method for oxidizing an aromatic compound having a methyl or methylene group by oxidizing with oxygen in the presence of an oxidation catalyst comprising an imide compound with a specific structure and a co-catalyst containing an element selected from the group consisting of Group 2A elements of the Periodic Table of Elements, transition metals (including Group 8 elements and Group 1B elements, such as Au and/or Ag, of the Periodic Table of Elements), and Group 3B elements of the Periodic Table of Elements, to give an aldehyde, ketone, alcohol, carboxylic acid, or the like.

Thus, the method of Ishii et al. uses an imide compound with a specific structure as an oxidation catalyst. Additionally, the co-catalyst used in the method of Ishii et al. is an ordinary compound containing such an element as described above, and is different from a catalyst containing Au and/or Ag, as an elementary substance, i.e. metal particles supported on a carrier, as required by amended, independent claim 1.

Further, Ishii et al. only teach an ordinary compound containing a Group VIII element of the Periodic Table of Elements as a co-catalyst. The reference fails to teach or suggest a catalyst comprising metal particles of Ag and/or Au and metal particles comprising one or more group VIII elements separately supported on a carrier, or metal particles comprising an alloy or an intermetallic compound of Ag and/or Au and one or more group VIII elements supported on a carrier, as required by new claim 7.

This is demonstrated in Examples E1 to E39 in columns 45 to 50 of Ishii et al. In these Examples, various aromatic compounds, each having a methyl group(s) are oxidized. However, none of the Examples employs metal particles of Ag and/or Au, as required by claim 1, or metal particles of Ag and/or Au and metal particles comprising any one or more kinds of group VIII separately supported on a carrier, or metal particles comprising an alloy or an intermetallic compound of Ag and/or Au and any one or more kinds of group VIII elements supported on a carrier, as required by new claim 7. It is evident from these Examples that the method of Ishii et al. is quite different in technical features from the methods set forth in Applicants' claims 1 to 9.

In short, Ishii et al. fail to teach or suggest a method for oxidation of an aromatic compound by oxidizing the aromatic compound having an alkyl substituent with an oxygen molecule in the presence of a catalyst comprising metal particles of Ag and/or Au supported on a carrier, as required by claim 1. Further, Ishii et al. fail to teach or suggest a method for producing an aromatic aldehyde by the same method, as required by claim 3. Additionally, Ishii et al. fail to teach or suggest producing an aromatic carboxylic acid ester comprising reacting the above aromatic aldehyde with a primary alcohol, as required by claim 4.

Ishii et al. also fail to teach or suggest a catalyst as recited in claim 1, wherein one or more group VIII elements are further supported on the catalyst., as required by claim 2.

Further, the anticipation rejection of claims 4 and 6 is improper because, as admitted by the Examiner, Ishii et al. does not exemplify the oxidation of an aromatic aldehyde to aromatic carboxylic acid ester. As described above, Ishii et al. fail to disclose or suggest reacting an aromatic compound having an alkyl substituent with an

oxygen molecule in the presence of a catalyst comprising metal particles of Au and/or Ag supported on a carrier to oxidize the alkyl substituent into an aldehyde group.

Ishii et al. disclose that the use of a proton solvent as a reaction solvent during the oxidation of an α,β -unsaturated nitrile, α,β -unsaturated carboxylic acid or a derivative thereof with an oxygen molecule to selectively oxidize an α,β -unsaturated bond makes it possible to give a diol derivative. However, the reference fails to teach or suggest that the use of a primary alcohol as a reaction solvent during the oxidation of an aromatic compound having an alkyl substituent with an oxygen molecule makes it possible to produce an aromatic carboxylic acid ester.

Furthermore, the methods of claims 1 to 9 result in unexpected advantageous effects. Specifically, an aromatic aldehyde compound can be obtained in a high yield with high selectivity by oxidizing an aromatic compound having an alkyl substituent with oxygen molecule in the presence of a catalyst comprising metal particles of Au and/or Ag supported on a carrier; and an aromatic compound having an alkyl substituent can be converted into an aromatic carboxylic acid ester in a direct, simple, and easy manner by allowing a primary alcohol to exist as a reaction solvent during the above oxidation reaction.

Ishii et al. fail to teach or suggest the above-discussed advantages.


For these reasons, the invention of claims 1-6 and new claims 7-9 is clearly patentable over Ishii et al.

Therefore, in view of the foregoing amendments and remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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